

# PLANNING AHEAD

## Notes for the Planning and Policy Community

Volume 5, Issue 8

October 2002

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### Planning Vacancies


#### **OASA (CW) - Developmental Position – Economist at Army Civil Works**

The Office of the Assistant Secretary of the Army (Civil Works), is accepting nominations for a developmental position for a GS-13 economist in Project Planning & Review (PP&R). A temporary promotion to the GS-13 level is available for a well-qualified GS-12 economist. The length of the assignment is not to exceed 120 days. The duties consist of plan formulation and economic review of Corps of Engineers civil works projects. The individual is expected to be very familiar with Corps civil works policy, planning processes, and economic evaluation techniques and methods. Prior experience with the review and/or preparation of feasibility or continuing authority studies, and with multiple project purposes, is highly desirable. The individual must be able to perform an objective and unbiased review, work as a member of a team, and have good communication skills. The individual will be expected to work collaboratively with both HQUSACE and Office of Management and Budget. PP&R will do all

possible to make this an interesting and productive experience and will work to help the individual get exposure within the Army (Pentagon) and HQUSACE.

Selection will be made from all applications received by 15 November. The form of the application should be similar to that use to apply for a Corps of Engineers position in RESUMIX. Emphasis should be on education and experience in the areas noted above.

The PP&R group is located in the General Accounting Office Building at 441 G. Street, NW, Washington, DC. This is the building where Corps Headquarters is located. The building is conveniently located in downtown Washington and near several subway lines. The Office of the Assistant Secretary of the Army (Civil Works) will work directly with the home office of the individual on the necessary financial arrangements. Short-term rental accommodations are available throughout the Washington metropolitan area.

For additional information, contact James J. Smyth, Deputy Assistant Secretary of the Army (Project Planning & Review), Office of the Assistant Secretary of the Army at (202) 761-0016 or [james.smyth@hqda.army.mil](mailto:james.smyth@hqda.army.mil). 

## **Planning Associates For FY 2003 Named**


*Russ Rangos – CECW-PG*

On 28 October, Jim Johnson officially selected the eight members of the FY 2003 Planning Associates Program. These eight will participate in a pilot launch of the highly successful development program, which spanned four decades until it was terminated in the mid '90's. This restructured version of the PA Program, which has been dubbed, "Not your father's PA Program," was designed to distill all the elements of the original PA program while recognizing today's demographic realities.

The goals of the Planning Associates Program are to broaden the competencies of high potential fully functional planners who will guide complex planning studies that lead to quality decision documents and who will provide water resources leadership in the future. While the former format of the PA was an 11-month residency at Ft. Belvoir, the modern program consists of training modules requiring 13-15 weeks of TDY taken in 2-3 week segments spread over 8 months.

The selectees for the FY 2003 PA Program are:

Jonathan Brown	CELRB-PM-PL
Bradley E. Thompson	CEMVR-PM-M
Steven Pugh	CENAB-PL-P
Bruce Sexauer	CENWS-PM-PL
David A. Martinson	CEPOA-EN-CW
Noel Clay	CESAW-TS-PS
Kayla Eckert	CESPL-PD-WC
Margaret Johanning	CESWT-PE-P


In next month's issue, we will publish the PA's bios in their own words. For additional information on the PA Program, contact Russ Rangos, CECW-PG/202 761-4241 [Russ.Rangos@usace.army.mil](mailto:Russ.Rangos@usace.army.mil) 

## **Looking to Your Future**

*Erika J. Hieber - IWR*

As Corps employees gear up for developing another year of performance (TAPES) objectives, Individual Development Plans will be integral to the discussions between staff and supervisors. Personal growth is essential to maintaining a knowledgeable and motivated workforce. Consider enhancing the direction and focus of your Corps career by pursuing a Masters Degree in Water Resources Planning and Management. This opportunity has been designed to cultivate professional growth, improve leadership skills, and help individuals achieve their personal goal of receiving an advanced degree well suited for their career.

Civil Works leadership recognizes the benefits of offering this type of opportunity to its personnel. Over the last year, HQUASCE and IWR staff has worked with four universities to develop curriculum and requirements for a water resource program specifically established for career development and advancement opportunities within the Corps. Sustaining a robust staff will ensure that the work accomplished by the Corps is not only responsive to the public's needs but also innovative in its approach to addressing future challenges. By investing in the development of its people, the Corps will be able to keep pace with the contemporary issues related to water resources planning and management and provide cutting edge solutions.

The Corps Masters Program is open for consideration by all Civil Works employees. The Program allows student's to complete their requirements within a compressed time frame at the government's expense. If you are interested in learning more about how the Corps Masters Program may fit into your career plans, please visit <http://www.iwr.usace.army.mil/iwr/planningcapabilities/degree.htm> or contact Erika Hieber at (703) 428-7250. 


## **Upcoming Meetings**

*Ellen Cummings – CECW-PD*

**AWRA's 2002 Annual Water Resources Conference** will be held in Philadelphia, PA at the Wyndham Franklin Plaza Hotel November 3-7. Daily forums will focus on Protecting Our Drinking Water Supplies, Sustaining Community-Based Stewardship, Effects of Urbanization on Riparian and Aquatic Ecosystems, and Total Maximum Daily Loads. After October 21, 2002, registration for non-members is \$580.00. The complete preliminary program is now available at: <http://www.awra.org/meetings/Philadelphia2002/>

The **International Conference on Shellfish Restoration** is scheduled for November 20-24, 2002 at the DoubleTree Guest Suites in Charleston, S.C. There will be a mix of invited keynote and panel presentations, case studies, roundtable discussions and over 90 oral and poster presentations. Program themes include "Shellfish Resource Habitat Management, Enhancement, and Restoration", "Shellfish/Habitat Restoration through Coastal and Watershed Management" and "Community-based Strategies to Restore Shellfish-Habitat". Registration will be \$260.00 after 19 October 2002. Additional information is available at <http://www.scseagrant.org/icsr.htm>

The Association of State Wetland Managers is coordinating the **Mid-Atlantic/Northeast Stream, Floodplain and Wetland Restoration Workshop** on November 12-14, 2002 in Bear Mountain, New York. The three-day workshop is directed to promoting and building capabilities in the Mid-Atlantic and Northeast to utilize stream stability and natural channel design concepts in stream, riverine wetland, floodplain and watershed management and restoration. There will be extensive discussion of dam removal issues and natural channel design. Registration is \$135.00 for non-ASWM members. For more information on the workshop, visit <http://www.aswm.org/calendar/midatlantic02/index.htm>.

**The Corps-wide Flood Plain Management Services & Planning Assistance to States Workshop**, will be held in Baltimore, MD at the Wyndham Baltimore Inner Harbor Hotel December 10-12. There will be a mix of invited keynote and panel presentations, case studies, and roundtable discussions. The program theme is *Technology* and *Partnering* and will include presentations on innovative activities taking place in districts, labs and other agencies. It will also address current issues and future plans for FPMS, PAS and the overall Corps planning program. Hotel reservations should be made by November 18. For additional information contact Ken Zwickl, 202-761-1936, Maurice Parker, 202-761-4478 or Rennie Sherman, 202-761-4495 

## **Finding the Correct Authority**

*Bill Schmitz – CECW-PL*

### **Researching a known authority (provision of a law)**

You may or may not be aware that just because Section xx of a Flood Control Act or WRDA says that the Corps has authority to carry out a certain activity or process in a certain manner, you can not rest-assured that you may legally proceed under that authority. In fact, the Act language you are reading may have been amended two or three times in subsequent Acts. If in the margin of your Act language there is a reference to a USC title and chapter, you should take an important second step – get your hands on a copy of the current United States Code\* or let your fingers do the walking at:


<http://uscode.house.gov/uscode.htm>. For users of the web version, the Office of the Law Revision Counsel of the U.S. House of Representatives cautions “While every effort has been made to ensure that the Code database on the web site is accurate, those using it for legal research should verify their results against the printed version of the United States Code available through the Government Printing Office.”

### **Researching a Civil Works mission or topic**

Perhaps your search is based only on a Civil Works topic or mission. The U.S. Code web site accommodates browsing and searching but, without a title and chapter number, such a search can be quite time-consuming. A tool has been developed in HQ Policy and Planning Division to assist in locating the current authority(ies) related to –

- Civil Works mission areas (flood control, navigation, ecosystem restoration, etc),
- General Civil Works authorities (feasibility reports, Tribal Partnership Program, interagency support, etc), and
- Civil Works activities under programs administered by other Federal agencies (Native America Grave Protection and Repatriation, marine sanctuaries, FERC hydropower licensing, etc).

“Civil Works – U.S. Code links” is a table accessible in both PDF and HTML formats through the Legislative Management Branch web page, [http://www.usace.army.mil/inet/functions/cw/cecwp/branches/leg\\_manage/index.htm](http://www.usace.army.mil/inet/functions/cw/cecwp/branches/leg_manage/index.htm). Once at the table, using the HTML version, any of 119 topics can be reached in no more than two clicks! View the statutory citation(s) and hyperlink to the applicable Code section on a site maintained by the Legal Information Institute at Cornell University.


*\* The U.S. Code is a consolidation and codification by subject matter of the general and permanent laws of the United States. It does not include regulations issued by executive branch agencies, decisions of the Federal courts, treaties, or laws enacted by State or local governments. The Office of the Law Revision Counsel of the U.S. House of Representatives prepares and publishes the Code pursuant to section 285b of title 2 of the Code.* 

## **Natural Resources Management Gateway**

*M. Kathleen Perales – CEERD-EE-E*

I'd like to introduce you to a knowledge management initiative of the US Army Corps of Engineers (CE) Natural Resources Management (NRM) community that is getting increasing use and attention in the field. The NRM Gateway is a repository of corporate information about the Corps NRM program. It provides one stop shopping for current information about various program areas, including policy, guidance, references, good ideas, related links, Headquarters updates, etc. Information is provided the way managers manage. For instance, if a ranger is tasked to establish a recreation use fee program for his/her lake, he/she can visit the recreation use fee program page on the Gateway for extensive information to get started. A great deal of information is also available to assist personnel in HR matters, training and career development.

Although the Gateway was initially developed as an internal resource for Corps employees, we expect to allow public access to non-sensitive pages in the near future. The items noted with a red castle are behind a secure, restricted firewall and are only accessible by users with *.army.mil* extensions. There are over 20,000 edited pages available on the Gateway at this point, and it continues to be a work in progress. The first emphasis for content was the recreation business function; we are now beginning to develop content for both Environmental Compliance and Environmental Stewardship. The majority of the information on recreation is located under the Employees page within the Committees and Program and Partnership links.

You can visit the Gateway at <http://corpslakes.usace.army.mil>. The Gateway uses "knowledge management (KM)" protocols with the National Recreation and Park Association's accreditation standards as part of its framework. The NRM Gateway provides a single portal for managers to access information. The next stage of the development will deal with an integrated facilities management approach. In other words, not by program areas but by management issues, for example, how do you run a campground or marina. The Gateway was developed by the Environmental Lab staff at the Corps Engineer Research & Development Center (ERDC), Vicksburg, as a product of the Recreation Management Support Program (RMSP). Ms. Judith Rice, CE Headquarters is the Program Manager for the Recreation Management Support Program, and Scott Jackson, ERDC, is the RMSP Project Manager. For additional information contact M. Kathleen Perales at [Kathleen.Perales@usace.army.mil](mailto:Kathleen.Perales@usace.army.mil). 

## **National Water Monitoring Day Celebrated along Indian Creek in Caldwell, Idaho**

*Debra K. Willis – CENWW-PM*

In recognition of the “Year of the Clean Water” 2002, scientists and government officials gathered with over 60 Caldwell school children and local residents for an afternoon along banks of Indian Creek. Sponsored by the City of Caldwell, Albertson College, National Park Service River and Trails Staff, and the Walla Walla District, this event promoted restoration efforts underway for developing a more natural, safe and healthier waterway.

Water quality experts conducted a “stream walk” along a section of the creek to help the children and residents identify potential problem areas and encourage the community to commit to improving the creek. As part of the celebration activities, children helped inspect and identify a wide variety of fish and other “crawly things” from the creek.

The Walla Walla District was recently asked by the city to help improve the riparian habitat along the creek by day-lighting about 900 feet of the waterway, now covered over by pavement and buildings, and return it to a more natural condition. The community is looking towards the Corps in helping them develop environmental sustainable solutions for the restoration of Indian Creek and its surroundings. U.S. Department of Commerce – Economic Development Administration is also a partner in this effort.

For additional information contact [Debra.k.willis@usace.army.mil](mailto:Debra.k.willis@usace.army.mil) (208-345-2065) 

## **Regional Sediment Management - Policy Study Report Available**

*Lynn R. Martin - IWR*

The Civil Works strategic plan identifies integrated water resources management as a theme and a framework for implementing future Civil Works studies and projects. Regional sediment management (RSM) has been identified as an example. As part of a recent policy study, IWR prepared a report on RSM that describes the background of the concept, and provides an overview of its initial implementation as part of ongoing demonstration efforts. The report also identifies and discusses issues that present real or potential impediments to implementing the RSM approach based on input from the early experiences of the demonstration efforts. The report, *Regional Sediment Management: Background and Overview of Initial Implementation*, has just been published and can be downloaded from:


[http://www.iwr.usace.army.mil/iwr/pdf/02ps2sed\\_man.pdf](http://www.iwr.usace.army.mil/iwr/pdf/02ps2sed_man.pdf). Limited hardcopies are also available.

The concept of RSM originated in the notion of coordinating dredging activities in the coastal zone for the purposes of retaining sand in the littoral system to foster more balanced, natural system processes, reduce costs, and potentially realize additional benefits. The concept has been expanded to incorporate and foster better coordination and integration of all activities involving sediment in a region - e.g. navigation channel maintenance and beach nourishment for either coastal storm damage protection or ecosystem restoration. RSM is based on the recognition of sand as a resource, much as water is a resource, both experiencing competing demands and often quantity and quality issues. RSM also recognizes the regional implications of dredging and other activities that affect sediment regimes, and that these effects must be addressed in a coordinated fashion. This coordination should involve the full range



of Corps activities and projects in a region, as well as the related efforts of state, local, and sometimes private entities.

A number of authorities and policies support the concept of RSM, or can facilitate RSM implementation. These include general and specific authorities that advocate regional approaches or system perspectives to water resources management and problem solving, as well as opportunities and responsibilities for Civil Works activities in coastal areas, or that focus on or include sediment management. The RSM demonstrations are providing lessons on improved business practices, techniques and tools necessary for managing resources at regional scales, as well as roles and relationships important to integrated water resources management. The report describes some of the realized or anticipated benefits from the RSM demonstrations, including monetary, in terms of cost savings, as well as institutional, programmatic, or technical benefits that may accrue to a particular project or extend to future projects and partnerships. The initial demonstration efforts (see Planning Ahead, December 2000,) pursued the approach primarily in the context of coastal watersheds, however subsequent efforts, and a new RSM Research Program extend the concept to sediment in riverine systems (see <http://hlnet.wes.army.mil/research/sedimentation/RSM/ProgDescriptionRSMP.pdf> and <http://hlnet.wes.army.mil/research/sedimentation/RSM/>).

For more information about this report, contact Ms. Lynn Martin, 703-428-8065; for copies of the report contact Ms. Arlene Nurthen at 703-428-9042. 

## **Homeland Security Activities**

*Chuck Moeslein - CECW-PG*

The terrorist attacks on 11 September 2001 against the United States and the potential for further attacks has required the U.S. Army Corps of Engineers (USACE) to re-evaluate security at critical infrastructure that it maintains and operates within its water resources missions.


Congress provided funding to the Emergency Response Fund through an Emergency Supplemental Appropriation Act (P.L. 107-38), signed by the President on September 18, 2001. The supplemental was provided for disaster assistance, for anti-terrorism initiatives, and for assistance in the recovery, including use of security guards, Risk Assessment Methodology for Dams (i.e. RAM-D) training, initiation of design and construction security measures at critical facilities, and to continue funding of physical security requirements at Corps projects.

Following the terrorist attack, the Corps initially provided 24-hour security at the most critical facilities (locks, dams, hydropower plants and Corps office/lab buildings). This was mostly in the form of armed guards and some temporary measures such as barriers. At the same time, the Corps began a process of evaluating each of these facilities using threat assessment methodologies to determine if additional measures are required to adequately protect them from this new threat. This has been an aggressive assessment program. Currently, the Corps has now completed and finalized assessments for its critical facilities.

The vulnerabilities of Corps of Engineers projects to terrorism include structural damage or destruction to a dam retaining structure resulting in failure of the dam and subsequent massive flooding downstream; biological or chemical contamination of water stored in flood control reservoirs; damage to navigation facilities; hydropower plants; and contamination of municipal water supplies at Corps of Engineers reservoirs.

The system the Corps is using to perform these evaluations is through a step-by-step threat assessment process developed by the Interagency Forum on Infrastructure Protection; a team of government dam owners, transmission system operators, and anti-terrorist experts. In addition to the Corps, the team included members from the FBI, TVA, Department of Energy, Bonneville Power Administration, U.S. Bureau of Reclamation, Sandia National Laboratories, Lawrence Livermore National Laboratory, Southwestern Power Administration, Western Power Administration and others.


The RAM-D assessment process takes the analyst through a step-by-step examination of each facility's unique situation – its potential adversaries, vulnerabilities, consequences of attack and existing security measures – then provides cost-benefit analysis of possible security upgrades. The methodologies used in RAM-D are based on many of the formal threat-assessment tools and techniques used to protect U.S. nuclear weapons facilities. The end result of the assessment is a series of possible security upgrades. This “series of upgrades” approach allows the Corps to analyze and decide how to balance the need for security with other considerations (costs, impact on operations, impacts on the public, etc.). The assessment helps determine such things as how operational changes can be made at negligible cost to achieve increased security or when physical security equipment will be needed. If physical security measures are required, the assessment helps determine where to place sensors, cameras or lights or whether to invest in walls, barriers, fences, better doors, extra training or improved policies.

Simultaneously with these efforts, the Corps is in the process of developing a holistic, coordinated, and collaborative strategic plan for homeland security. The Corps will continue to coordinate and facilitate activities with the President's Office of Homeland Security (OHS), the Federal Emergency Management Agency (FEMA) Office of National Preparedness (ONP) and appropriate elements of the Department of Defense (DOD) and the Department of the Army (DA) of all USACE efforts to assist Federal, state and local emergency management and emergency response organizations with mitigation, planning, training, and exercises necessary to build and sustain capabilities to provide protection from and respond to any emergency or disaster, including a terrorist incident involving weapons of mass destruction (WMD), as well as other natural or manmade hazards. 

## **Preliminary Waterborne Commerce Statistics for 2001**

*Jay Wieriman and Amy Tujague – CEIWR-NDC-C*

Preliminary domestic waterborne tonnages for CY2001 by major commodity groups and river direction are currently available for 18 major waterways from the Navigation Data Center (NDC). These statistics are available on our web site [www.iwr.usace.army.mil/ndc](http://www.iwr.usace.army.mil/ndc) or by requesting a hard copy from Waterborne Commerce Statistics Center (504-862-1424).

National domestic waterborne tonnage is down approximately 3 percent from last year (2000) with the largest percentage drop being in the Great Lakes. Coal shipments are up after two lower than average years. All other major commodities showed a decline in tonnages from the previous year, especially manufactured goods and equipment. Of the river systems that carry the most tons (i.e., Mississippi, Ohio, Gulf Intracoastal, Tennessee, and Illinois), only the Ohio showed gains over the previous year. Final CY2001 statistics should be available at the end of the current year. For more information on domestic waterborne commerce contact Jay Wieriman at 504-862-1402. 




## **Ports of Baton Rouge and Lake Charles, LA Port Series Updated**

*Arlene L. Dietz – CEIWR-NDC*

The Port Series, *Ports of Baton Rouge and Lake Charles, LA* is one of 56 volumes published by the Institute for Water Resources Navigation Data Center. The reports, which collectively cover nearly 10,000 U.S. facilities, are updated on an average of every 10 years, sooner if requested by a Corps district. These reports document, but are not limited to the location; operations (name, owner, operator, purpose, handling equipment, rates, and details of open and covered storage facilities); and type and dimensions of construction (from length of berth space to details of rail and highway access) of waterway facilities on the U.S. coasts, Great Lakes and inland/intracoastal waterways.

This report covers two areas: The area within parishes of East Baton Rouge, West Baton Rouge, Iberville and Ascension, covering the Mississippi River from mile 168.3 to mile 255.2 above Head of Passes; and The Port of Lake Charles which embraces 203 square miles located entirely within Calcasieu Parish and includes cities of Lake Charles and West Lake.

Access to information on each facility is on the NDC web site at [www.iwr.usace.army.mil/ndc](http://www.iwr.usace.army.mil/ndc). Hard copies with aerials and photos of each facility are available from NDC. Contact Virginia Pankow at 703-428-9047 for more information or to discuss your specific update needs. 

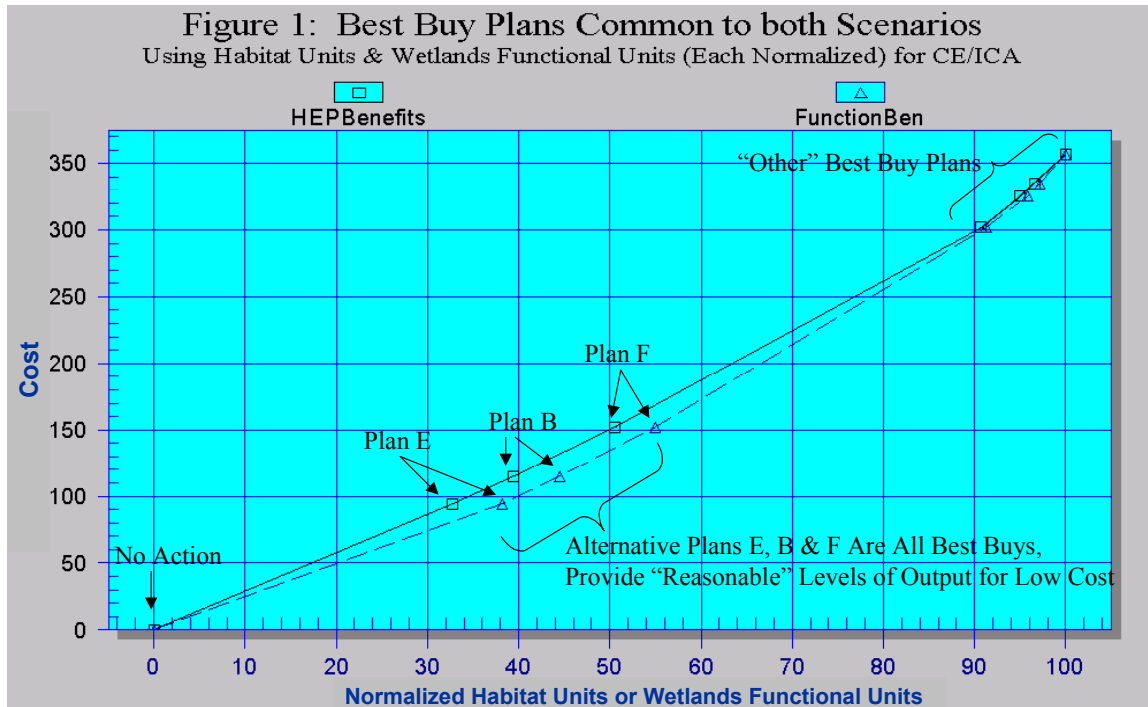
## **Performing Cost Effectiveness and Incremental Cost Analyses on Multiple Ecosystem Outputs**

*Leigh Skaggs, CEIWR-MD*

Corps professionals involved in planning ecosystem restoration projects are aware of the need to perform cost effectiveness and incremental cost analyses (CE/ICA) in the evaluation and comparison of alternative ecosystem restoration plans. Project delivery teams throughout the Corps have successfully used planning tools such as IWR-PLAN decision support software to conduct CE/ICA, and to many individuals the CE/ICA procedures themselves are now quite routine. A factor that can complicate CE/ICA, however, and one that analysts will increasingly confront, is the issue of multiple ecosystem outputs. That is, how do we interpret and use the results of CE/ICA to help evaluate, compare, and ultimately select a recommended plan when we have quantified and measured more than one output for the alternatives under consideration? In other words, what do we mean (in terms of an individual planning study) by “cost effective”? If we can satisfy ourselves that our analysis has identified cost effective plans in terms of providing multiple desired ecosystem outputs, and we in turn select a cost effective plan that performs well on multiple attributes, then are we not more confident that our recommended plan best serves the Corps, our customers, and ultimately the Nation?

Three possible methods for addressing the issue of multiple ecosystem outputs are presented below. In each case, IWR-PLAN software was used to demonstrate the technique and to display the results. Other individuals who have employed different techniques are invited to share them.

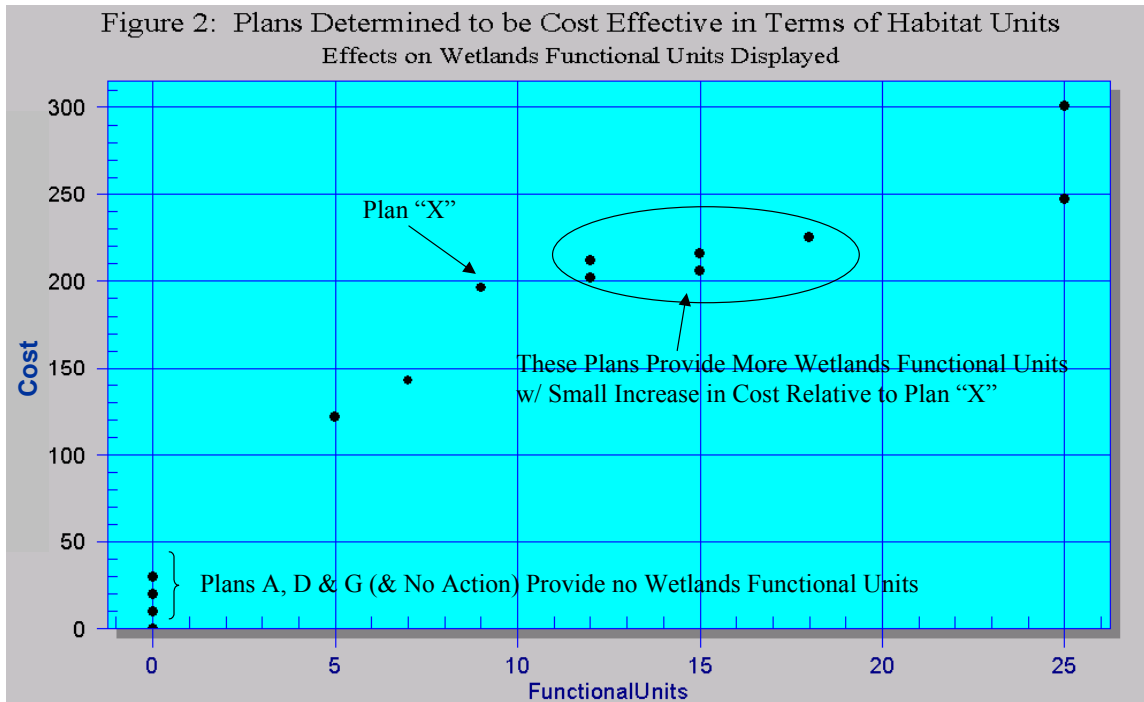
One method is quite simply to run CE/ICA separately for different outputs and compare the results. IWR-PLAN's capability to run multiple scenarios using the same set of data and display multiple scenario results makes this comparison relatively simple, an example of which is provided in Figure 1 below.



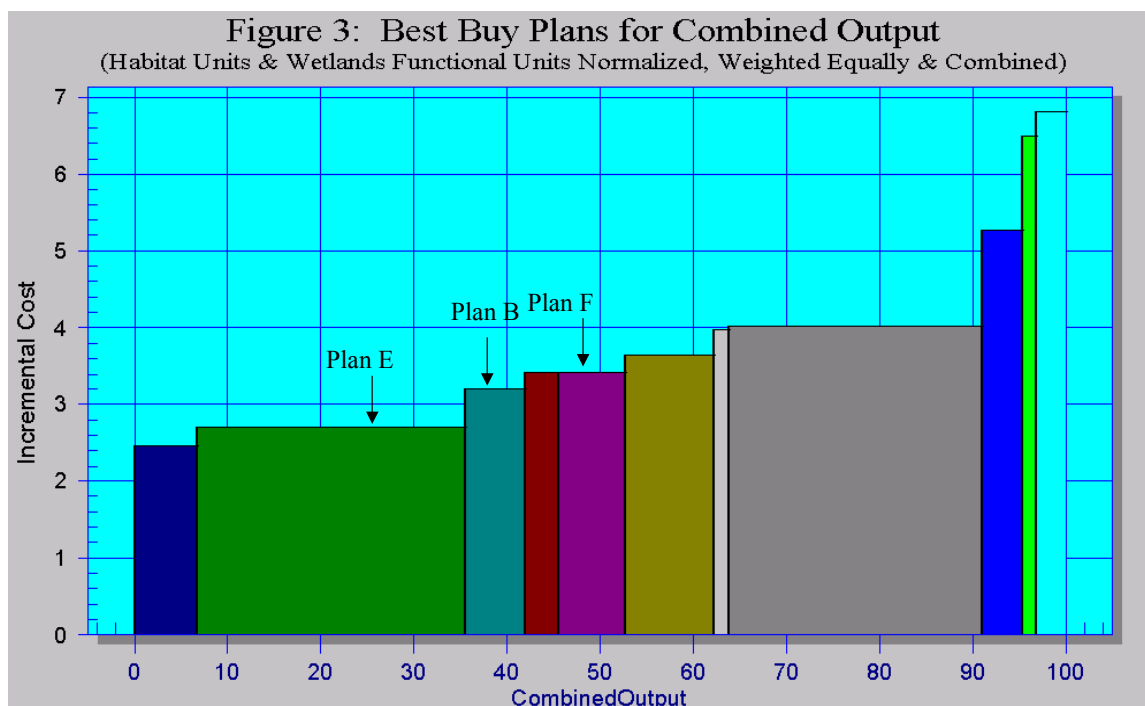
Let's say we have measured the outputs of alternative wetlands restoration sites in terms of habitat units (for the clapper rail bird species, for example) and wetlands functional units (a "customized" metric developed by the study team reflecting fish and wildlife habitat, primary production, water quality, erosion, flood buffer, and aesthetics values). We would then conduct CE/ICA first using habitat units as our output parameter, followed by a second CE/ICA run using functional units as our output parameter. We would then compare the results of the two runs to see what alternative plans are identified as cost effective, or better yet, identified as best buy plans (i.e., the cost effective plans that provide the greatest increases in output for the least increases in cost), in both runs. In other words, do particular alternatives appear to be superior investments regardless of the output metric we have selected? If this is the case and the results of the two CE/ICA procedures tend to corroborate each other, then we have greater confidence that we have in fact identified a defensible cost effective plan. (This method and example are fully documented in Norfolk District's Elizabeth River, Virginia Environmental Restoration Study, completed in 2001). Conversely, if the results conflict with each other, then perhaps we need to re-formulate to develop additional alternatives, or perhaps we need to go back and more closely scrutinize how we measured outputs, whether our outputs really do reflect our planning objectives, or whether one of the outputs is actually more important than the other.

A second potential method could be employed when the project delivery team determines that one environmental output is more important than another. Using the same metrics described in the last example, let's say that habitat units are the *primary* output of interest and wetlands functional units are *secondary*. In this hypothetical situation, what we are really interested in is identifying the plans that cost-effectively produce clapper rail habitat (as an indicator of overall salt marsh health). However, in seeking to distinguish among those cost effective plans, we are also interested in how well those plans produce wetlands functional units (i.e., how much they improve overall fish and wildlife habitat, primary


production, water quality, erosion prevention, flood buffer, and aesthetics). In this case we would first run CE/ICA selecting habitat units as the output parameter. Cost effective or best buy plans in terms of habitat units are identified. We would then display how well those cost effective or best buy plans do (or how much they produce) in terms of wetlands functional units. The cost effective plans that also score well in wetlands functional units would be logical candidates for selection. Conversely, cost effective plans that provide few functional units could be eliminated from consideration. IWR-PLAN software can display alternative plans' effects on these secondary outputs (see Figure 2 below).



A third method to address multiple outputs would be to simply combine the outputs into a new metric. If two output units are of the same metric, such as two types of habitat units or acres of two different cover types, it may be possible to simply add either the habitat units or acres and run CE/ICA on the total or combined quantity of either habitat units or acres. Although this technique is frequently employed, caution dictates that the study team members having expertise in the methodology used to quantify or estimate the ecosystem outputs (e.g., the biologists who select particular habitat suitability index models and calculate habitat units) should consider whether the “combining of outputs” approach is appropriate for their study. The two outputs may be weighted equally, or one output may be given a greater weight, again only if agreed to by the study team. When the outputs used in a particular study are of unlike metrics, such as the habitat units and wetlands units used in the example above, then the two different outputs would first need to be normalized as an index, such as a 0 to 1 or a 0 to 100 scale. The normalized values for the two outputs could then be combined and CE/ICA run on the combined output parameter. The identified cost effective and best buy plans would thus reflect plans that do “well” at providing both types of outputs. Again, IWR-PLAN software supports the normalizing, weighting, and combining of different outputs through the “derived” variable function. An example incremental cost graph for which habitat units and wetlands functional units were first normalized (at a 0 to 100 scale), then combined and equally weighted, is displayed in Figure 3 below.




Of course, the three methods just described are not mutually exclusive. Given the capabilities of IWR-PLAN, it is relatively easy and certainly quick to use any two or all three methods. Running CE/ICA for all three methods and interpreting the collective results could in fact lead to a more complete analysis. If all the results point to the same conclusion, the rationale for a particular recommendation is probably strengthened; if not, then questions should be asked (and decisions made) regarding such issues as appropriateness of output metrics, weights given to outputs, and whether a sufficient range of alternatives was considered, among others.

For more information on IWR-PLAN or to discuss your experiences in conducting CE/ICA on multiple outputs, please contact Leigh Skaggs at (703) 428-9091 or [lawrence.l.skaggs@usace.army.mil](mailto:lawrence.l.skaggs@usace.army.mil). To download a free copy of IWR-PLAN software, visit the IWR web site: <http://www.iwr.usace.army.mil>. Click on “Products”, then “Software”, then “IWR-PLAN”. 

## **Instructions for Contributors to Planning Ahead**


This newsletter is designed to improve the communication among all the planners and those we work with throughout the Corps. We hope that future editions will have mostly information and perspective from those of you on the front lines in the districts. We hope that these notes become a forum for you to share your experiences to help all of us learn from each other. We can't afford to reinvent the wheel in each office. We welcome your thoughts, questions, success stories, and bitter lessons so that we can share them on these pages. The articles should be short (2-3 paragraphs) except in some cases where you just have to say more.

- Use MS WORD
- Use "normal" style
- Use Times New Roman font, 11 point
- All text should be left justified with start of each paragraph indented by one tab stop.
- Each article should have short title with only initial letter of each word capitalized
- Following each title should be author's name and organization
- Last line should be contact information – phone number or e-mail address 

## **Subscribing to Planning Ahead**

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That single line of text should be: "subscribe ls-planningahead"

To obtain a 'help' file, send only the word 'help' in the text of the message (nothing in the subject line) and address it to [majordomo@lst.usace.army.mil](mailto:majordomo@lst.usace.army.mil) 

## **Submissions Deadline**

The deadline for material for the next issue is 25 November 2002.

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